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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,592	11/20/2006	Robert Seth Hartshorne	57,0534 US PCT	3968
370/3 7590 08/09/2010 SCHLUMBERGER-DOLL RESEARCH ATTN: INTELLECTUAL PROPERTY LAW DEPARTMENT P.O. BOX 425045 CAMBRIDGE, MA 02142				
EXAMINER				
LI, AIQUN				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/574,592

Applicant(s)

HARTSHORNE ET AL.

Examiner

AIQUN LI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 55, 56, 58-67 and 71-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55, 56, 58-67 and 71-83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 55, 56, 58-67 and 71-83 are pending as amended on 22 June 2010, claims 57 and 68-70 being cancelled.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Applicant's amendments to the claims and the remarks/arguments filed 22 June 2010 have been entered and fully considered.

Response to Amendment and Arguments

4. Applicant's amendment to independent claim 55, requiring that the anionic surfactant is a dimer/trimer/oligomer, distinguishes over US Patent 6435277 (Qu). The rejection under 35 USC 102(b) of claims 55, 56 and 58-66, and the rejection under 35 USC 102(b)/103(a) of claim 67 over Qu have been withdrawn.
5. Applicant's amendment to independent claims 55 and 71, specifying the formation temperature is at least 100 degree Celsius, distinguishes over WO02/064946 (Zhou). The rejection under 35 USC 102(b) of claims 55, 56, 58, 60-66, 68-74 and 76-80, and the rejection under 35 USC 102(b)/103(a) of claims 67 and 81-82 over Zhou have been withdrawn.

6. Applicant's arguments have been fully considered.

Applicant's argument in light of the amended claims that Qu fails to disclose the temperature of at least 100 degree C is not persuasive. Qu expressly discloses that the viscous fluids have a viscosity of at least 50 cp at 100 sec⁻¹ and bottom hole temperature, and are stable to temperatures in excess of 130°F, preferably at least 150°F, more preferably at least 200 °F (col.6, line 45-53). Qu exemplifies the viscosity above 50 cp at 100 sec⁻¹ up to 275 °F (Examples 15 and 22), which meets the limitation of at least 100 degree C. Therefore the rejection under 35 USC 102(b) of claims 71-82 over Qu is maintained.

Applicant's other arguments in light of the amendments have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102/103

7. **Claims 71-82** stand rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 6435277 (QU).

Qu teaches a method of fracturing a formation comprises:

providing an aqueous hydraulic fracturing fluid comprising an aqueous medium, an effective amount of a water-soluble salt and a surfactant selected from the group of surfactants consisting of cationic, anionic, zwitterionic, nonionic

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and combinations thereof, wherein the surfactants are capable of forming viscosifying worm-like micelles (col.7, line 55-65 and col.29, line 43-46),

pumping the viscous fluid comprising such micelles through the wellbore and into the formation (col.7, line 66-67 and col.8, line 1-5);

Qu exemplifies the viscosifying surfactants as anionic surfactants (col.20, line 1-45) or a combination of non-ionic and anionic surfactant system (col.19, line 60-63, col.25, line 30-65, col.26, line 1-15, and col.29, line 5-10), wherein the anionic surfactants include aliphatic carboxylic acids such as oleate (col.25, line 50-55 and Examples 22-23), erucyl or tallowyl containing carboxylic acid (col.20, line 1-30), alkylsulfosuccinates, N-acylsarcosinate etc. (col.20, line 41-43), and the nonionic surfactants include octanol and longer chain aliphatic alcohols, ethylene oxide derivatives of octanol and longer chain aliphatic alcohols, hydroxyl ethers, amine oxide etc (col.25, line 30-48), which meets the limitation of water miscible nonionic organic compounds. Additionally, Qu further teaches that a sufficient quantity of alcohol may optionally be employed to provide desired viscosity under severe conditions (col.26, line 19-21), wherein the alcohols include isopropanol or propylene glycol (col.27, line 40-45), which also meets the limitation of water miscible nonionic organic compounds.

Qu further discloses that the brine concentration is more preferred from zero to 5% (col.26, line 12-14), exemplifying as water (no brine), 2% (Example 26) or 3% (Examples 22-23).

Qu further discloses that the viscous fluids have a viscosity of at least 50 cp at 100 sec^{-1} and bottom hole temperature, and are stable to temperatures in

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excess of 130°F, preferably at least 150°F, more preferably at least 200 °F (col.6, line 45-53). Qu exemplifies the viscosity above 50 cp at 100 sec⁻¹ up to 275 °F (Examples 15 and 22), which meets the limitation of at least 100 degree C. Qu further exemplifies the viscosity above 100 cp at 100 sec⁻¹ at the temperature from about 125 °F to 275 °F (Figure 31).

8. **Claims 71-72, 74-76 and 78-82 are** rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US Patent 4108779 (Carney).

Carney teaches a method comprising injecting into a well having a bottom hole temperature of 310 °F (Example 1 and col.10, line 18-20) a fluid comprising dimerized oleic acid to increase the viscosity of the fluid (col.4, line 10-20), which meets the limitation of the anionic surfactant, oleyl amide derived from diethanol amine (col.3, line 35-55 and col.col.8, line 50-60), which meets the limitation of a nonionic hydrophilic-lipophilic organic compound since the oleyl amide is an alkanolamide derived from diethanolamine, and fresh water having an overall dissolved salt content of less than 1000 ppm (col.9, line 30-40).

Regarding the limitation of the viscosity of claims 71 and 81-82, since Carney teaches the same composition as claimed, the viscosity of the Carney composition would inherently be the same as claimed. If there is any difference between the product of Carney and the product of the instant claims the difference would have been minor and obvious. "Products of identical chemical

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composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. See MPEP 2112.01(I) , *In re Best*, 562 F2d at 1255, 195 USPQ at 433, *Titanium Metals Corp v Banner*, 778 F2d 775, 227 USPQ 773 (Fed Cir 1985), *In re Ludtke*, 441 F2d 660, 169 USPQ 563 (CCPA 1971) and *Northam Warren Corp v D F Newfield Co*, 7 F Supp 773, 22 USPQ 313 (EDNY 1934).

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 USC 102 and 103. "There is nothing inconsistent in concurrent rejections for obviousness under 35 USC 103 and for anticipation under 35 USC 102." See MPEP 2112(III) and *In re Best*, 562 F2d at 1255, 195 USPQ at 433.

Further, the recitation of " a fracturing fluid or a diverting fluid" in claim 78 merely recites the intended use of the fluid. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

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9. **Claims 55, 56, 58-60, 62-67 and new claim 83** are rejected under 35 U.S.C. 103(a) as being unpatentable over Carney.

The teachings of Carney are detailed in the rejection under 35 U.S.C. 102(b) /103(a) of claims 71-72, 74-76 and 78-82 above.

Carney further teaches the treatment fluid comprising about 2-5% by weight of oleyl amide (col.8, line 50-60) and 8-12% by weight of dimerized oleic acid, which is equivalent to about 0.25 to 0.96 molar ratio of amide to dimerized oleic acid, which entirely overlaps the instantly claimed range.

One of ordinary skill in the art at the time the invention was made would have found it obvious to include the molar ratio at the instantly claimed range since it has been held that in the case where the claimed ranges "overlap or lie inside range disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F. 2d 257, 191 USPQ 90 (CCPA 1976). See MPEP 2144.05.I.

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. See MPEP 2144.05, *In re Boesch*, 617 F2d 272, 205 USPQ 215 (CCPA 1980); *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and *In re Hoeschele*, 406 F2d 1403, 160 USPQ 809 (CCPA 1969).

Further, the recitation of "a fracturing fluid or a diverting fluid" in claim 64 merely recites the intended use of the fluid. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention

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from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

10. **Claims 55,56, 58-67 and new claim 83** are rejected under 35 U.S.C. 103(a) as being unpatentable over Qu as applied to claims 71-82 above in view of WO02/11874A1 (Hughes).

The teachings of Qu are detailed in the rejection under 35 USC 102(b) of claims 71-82 above.

Qu further discloses that for anionic surfactant with 18 to 24 hydrocarbon, preferred concentration is from 0.5% to 15%, the nonionic surfactant such as ocatanol can be from 20% to 1% (col.26, line 6-15), which is equivalent to a molar ratio of nonionic surfactant to anionic surfactant of about 0.16 calculated by the examiner based on 15 % of potassium oleate and 1% of octanol.

Qu does not expressly teach the anionic surfactant for forming a viscoelastic gel is a dimmeric/trimeric/oligomeric anionic surfactant.

Hughes teaches oligomer surfactants having the formula $(R_1-X)_pZ_m$ (p8, line 11-15) such as oleate oligomer surfactant, oleate dimers (Figure 1a-e) or oleate trimers (p18, line 16-18) are particularly suitable for use as wellbore thickening agents (p7, line 5-10), with the advantage of inhibiting the formation of oil/water emulsions, promoting oil and water separation, providing higher viscosities at higher temperatures and lower surfactant concentrations therefore increasing the useful working temperatures of the viscoelastic well bore treatment fluid (p7, line 5-35). Hughes further teaches such oligomeric

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surfactants can be used together with monomeric surfactant for controlling the viscoelasticity of the fluid (p9, line 23-35) and provides a treatment fluid of viscosity at least 50 cp for all temperatures in the range of 120 to 260 °F (49 to 126.5 °C), and exemplifies the concentration of the oleate dimer as 2.25% , 3% and 4.5% (Figure 2 and p15, line 18-20).

At the time the invention was made it would have been obvious for a person of ordinary skill in the art to include Hughes' oleate dimers, trimers or oligomers in the method and treatment fluid of Qu. The rationale to do so would have been the motivation provided by the teachings of Hughes that to do so would predictably provide higher viscosities at higher temperatures and lower surfactant concentrations while inhibiting the formation of oil/water emulsions and promoting oil and water separation (Hughes, p7, line 5-35), and further since it has been held that it is *prima facie* obviousness to combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. In the instant case, a viscoelastic anionic surfactant for high temperature well treatment. See MPEP 2144.06(I), *In re Kerkhoven*, 626 F2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980), *In re Crockett*, 279 F2d 274, 126 USPQ 186 (CCPA 1960) and *Ex parte Quadranti*, 25 USPQ2d 1071 (Bd Pat App & Inter 1992).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.**

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See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AIQUN LI whose telephone number is (571)270-7736. The examiner can normally be reached on Monday -Thursday, 9:30 am - 6:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571)2721398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. L./
Examiner, Art Unit 1796

/Timothy J. Kugel/
Primary Examiner, Art Unit 1796